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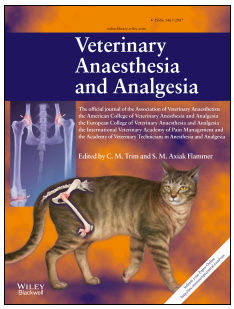

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LETTER TO THE EDITOR

Lumbar paravertebral nerve blockade has been well described in cattle for standing surgical procedures (Skarda 1996), however there is little published information of this technique being utilized in dogs. We report the use of multilevel paravertebral nerve blocks as a local anaesthetic technique in a dog underdoing abdominal wall resection.

A 10 year 11 month old cross breed dog weighing 11.6 kg presented for left abdominal wall resection to remove a large soft tissue sarcoma. Preanaesthetic physical examination, haematology and blood biochemistry were unremarkable. Computed tomography imaging revealed a large (8.7 x 8.4 x 6.8 cm) mass visible within the left internal and external abdominal oblique muscles at the level of L3 to L6. Premedication with methadone (0.2 mg kg^{-1}, Comfortan; Dechra, UK) and acepromazine (0.025 mg kg^{-1}, ACP; Elanco Animal Health, UK) was administered intramuscularly (IM) and an intravenous (IV) cannula placed in the right cephalic vein 30 minutes later. Anaesthesia was induced with IV propofol (5.2 mg kg^{-1}, Propoflo; Abbott Laboratories, UK), and following endotracheal intubation with a 7.5 mm cuffed endotracheal tube; was maintained with isoflurane in oxygen via a circle breathing system. Carprofen was administered IV (2 mg kg^{-1}, Rimadyl; Zoetis, USA).

Based on the location of the mass we elected to block the left lumbar nerves L1 to L5 to desensitize the appropriate dermatomes (Fletcher & Kitchell 1966). The cranio-caudal, dorso-ventral path that the nerves follow from their exit point at the intervertebral foramen means the lumbar nerve lies at the caudal edge of the lumbar vertebrae of the same name (Evans & De Lahunta, 2013). A combination of 2 mg kg^{-1} lidocaine solution (Lidocaine Hydrochloride Injection 2%; Hameln pharmaceuticals, UK) and 2 mg kg^{-1} bupivacaine solution (Marcaine Polyamp Steripack 0.25%; AstraZeneca, UK) was used,

resulting in a total volume of 10 mL. This combination was chosen to increase the speed of onset of the block (Cruz et al. 1997); however combining local anaesthetics in this way is controversial due to differences in pKa and pH between the solutions. The dog was positioned in right lateral recumbency and an electrical nerve stimulator was used for nerve location (Plexygon Nerve Simulator; Vygon, UK) with a 35 mm 23 gauge insulated needle (Echoplex+; Vygon, UK). Needle insertion was at the caudal edge of the transverse process of the lumbar vertebrae, perpendicular to the skin in the horizontal plane. The nerve stimulator was set to deliver a current of 1 mA at 2 Hz, and the needle advanced slowly until a panniculus reflex was elicited. The current was then decreased until the motor response was no longer visible at 0.4 mA but returned when the current was increased. A volume of 2 mL of the local anaesthetic mixture was injected per site, after first aspirating to ensure no blood was present in the needle hub. No resistance to injection was encountered.

The paravertebral nerve blocks took 10 minutes to perform, and the first surgical incision made 50 minutes later. An IV infusion of fentanyl (Fentadon; Eurovet Animal Health, Netherlands) was administered in theatre at a rate of 5μg kg^{-1} $hour^{-1}$ as part of a multimodal analgesic approach, and to provide a centrally mediated MAC sparing effect. This was reduced to 4μg kg^{-1} $hour^{-1}$ 60 minutes after the first incision; was discontinued 70 minutes after this, and surgery finished 20 minutes later. No additional analgesia was required at any time, heart rate remained between 68 and 85 beats $minute^{-1}$, mean arterial blood pressure between 60 and 80 mmHg and end tidal isoflurane concentration (F_E´Iso) between 0.75 and 1.00%.

Postoperatively the dog was assessed using the Glasgow short form composite measure pain score 30 minutes after extubation once fully recovered, and scored zero. No further pain scores were recorded as our hospital policy requires an analgesic plan to be

made by the anaesthetist and implemented at predetermined times by overnight nursing staff. Any concerns regarding pain or otherwise are directed to the night intern, and the anaesthetist called if necessary. The first postoperative dose of methadone (0.2 mg kg^{-1}) was administered IV 90 minutes after extubation, and subsequently every four hours overnight. This timing was to ensure that opioid analgesia was adequate when the effect of the paravertebral block was anticipated to subside. We feel that the nerve block was successful based on the intraoperative cardiovascular stability, low F_E´Iso concentrations, a pain score of zero 30 minutes post extubation, and no requirement for any intra or postoperative rescue analgesia.

We conclude that this technique is suitable for providing local anaesthesia for extensive abdominal wall surgery in dogs. The use of multilevel paravertebral blocks have been described for a wide range of procedures in humans, including inguinal hernia repair (Klein et al. 2002). We therefore feel there are more potential applications for this nerve block in canine patients, with additional research required to refine the technique and dose requirements.

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